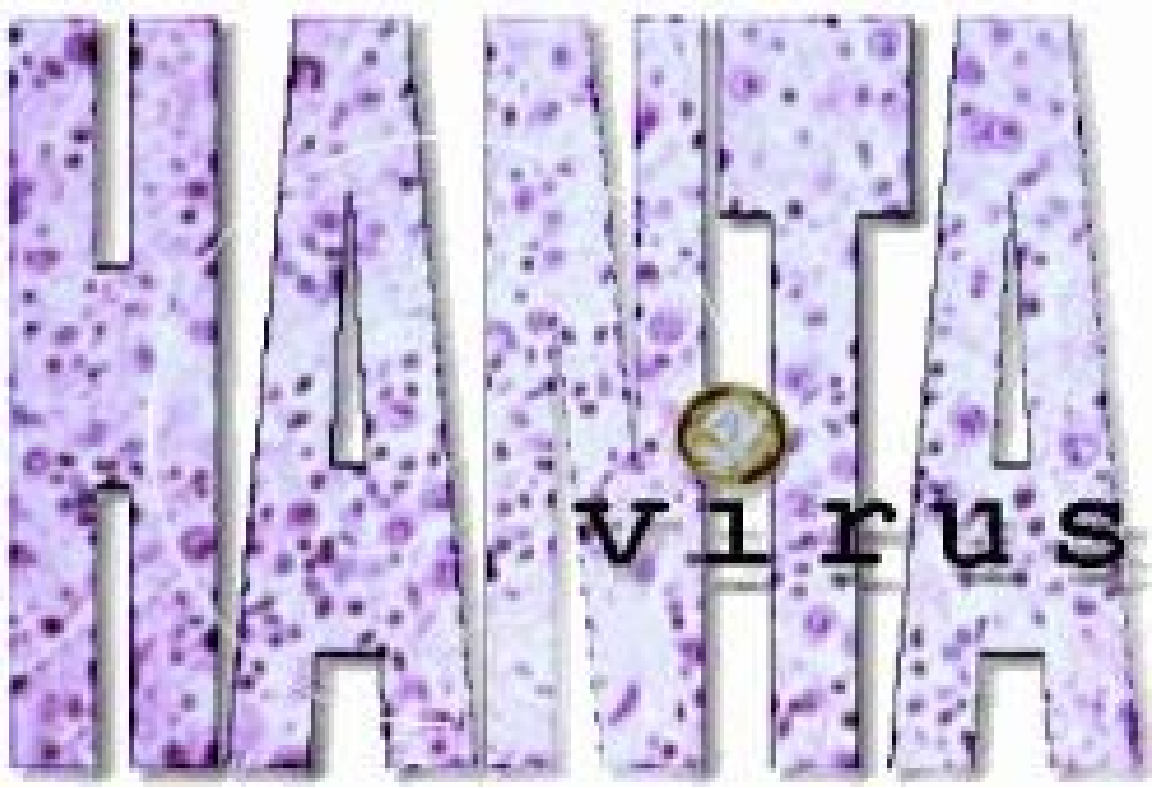

Developed by:
ASC Command Surgeon's Office
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309-782-2702 / DSN 793-2702

ASC – On The Line

OUTLINE

- History of Hantavirus Pulmonary Syndrome
- Characteristics of Known Hantaviruses
- Case Info and Symptoms
- Transmission
- Precautions
- Who’s at Risk
- Cleaning Procedures
- Summary

HISTORY OF Hantavirus Pulmonary Syndrome

- An outbreak of unexplained illness occurred in May 1993 in the “Four Corners”

“Bumper Crop of Rodents”

- Heavy snows and rains in 1993
- Plentiful supply of food (Pinenuts)
- Increased population of rodents (10 times)

HISTORY OF Hantavirus Pulmonary Syndrome

- A new hantavirus was identified and called the Muerto Canyon Virus
- Later changed to Sin Nombre Virus
- The new disease was called hantavirus pulmonary syndrome (HPS)
- “New” hantavirus present at least since 1959
- Navajo medical traditions associate it with mice

CHARACTERISTICS OF KNOWN HANTAVIRUSES

	Hantaan	Seoul	Puumala	Prospect Hill	Sin Nombre
Geographic Region	Asia	Worldwide	Northern Europe	U.S.	North America
Reservoir	Field Mouse	Domestic Rat	Bank Vole	Meadow Vole	Deer Mouse
Pathology	Renal	Renal	Renal	NA	Pulmonary
Mortality	5 – 15%	1%	1%	NA	35%

CASE INFO / SYMPTOMS

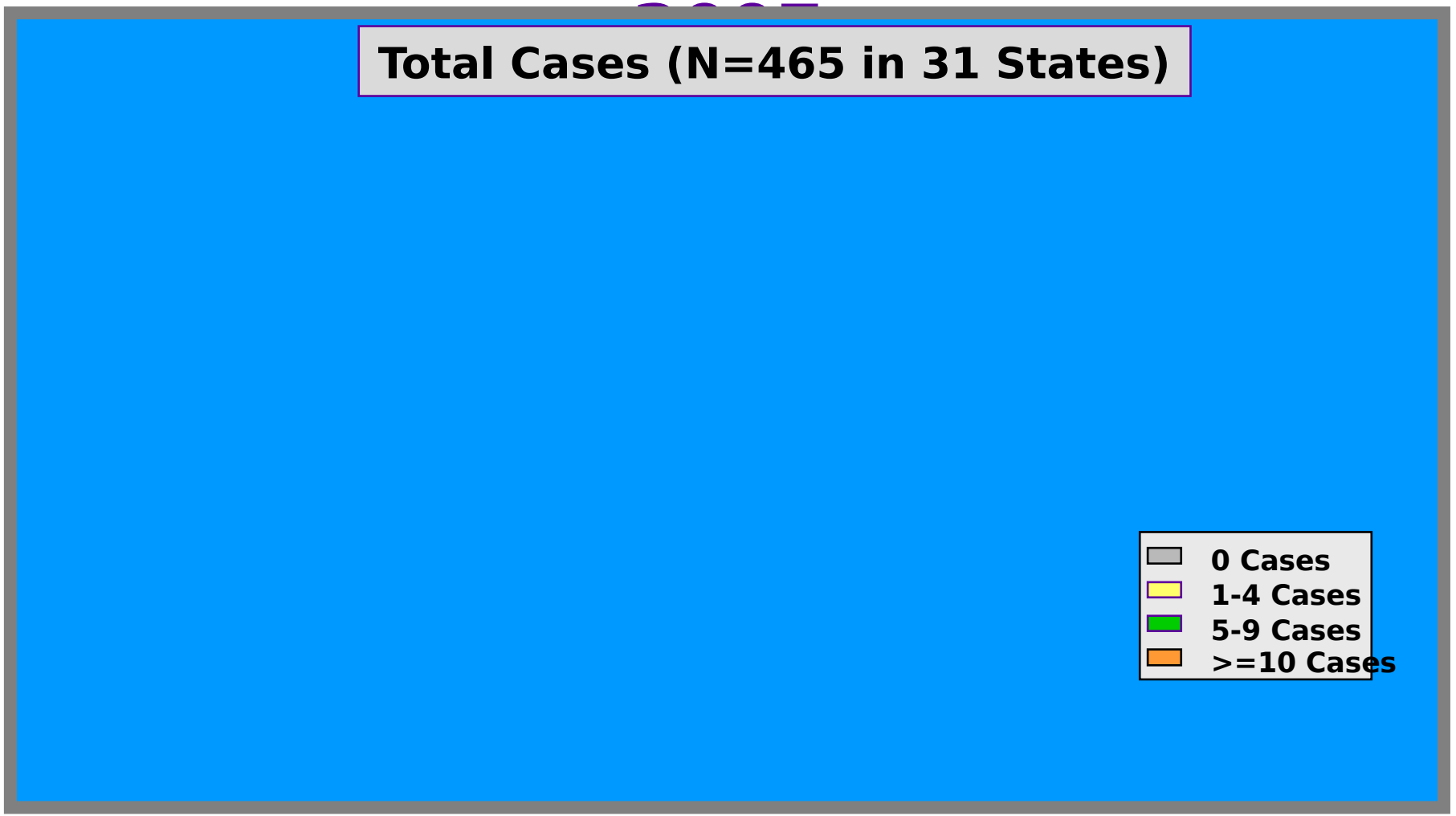
- As of MAR 26, 2007, 465 cases have been reported.
- 35 % resulted in death.
- SYMPTOMS

  - Early (universal): First fatigue, fever, & muscle pain (flu-like)

  - Early (about half): Headache, dizziness, chills

  - Late (universal): severe shortness of breath, coughing & pulmonary edema- leading to severe respiratory compromise
- TREATMENT At the present time, there is no specific treatment for the hantavirus infection.

Hantavirus Pulmonary Syndrome Cases by State of Residence– March 26, 2025



TRANSMISSION

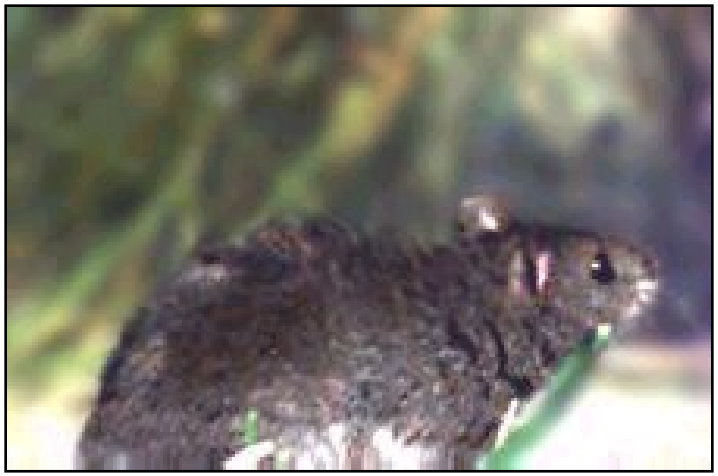
Chronically infected rodent

Virus present urine, feces, saliva, and nests

Virus is transmitted to humans through inhalation of aerosolized urine and feces

CARRIERS

DEER MOUSE

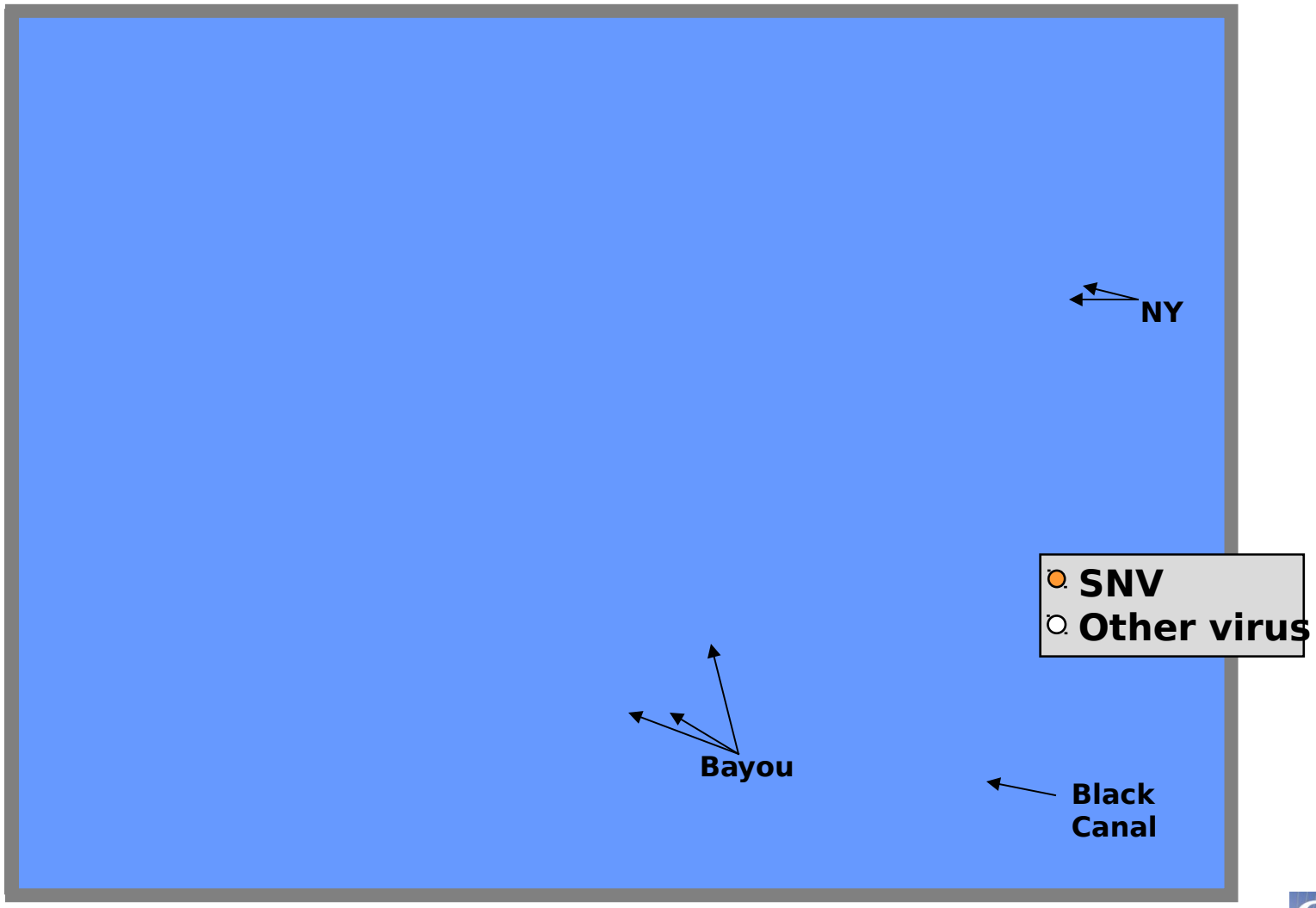


RICE RAT

COTTON RAT

WHITE-FOOTED MOUSE

Distribution* of the Deer Mouse and Location of HPS Cases as of September 18, 2002



*Rodent distributions from: Burt WH, Grossenheider RP. A Field Guide to the Mammals. 3rd ed. New York, New York. Houghton Mifflin Company. 1980

WHO'S AT RISK?

- Anyone - old/young/male/female
- Living almost anywhere in the Americas
- Similar hantavirus strains are found throughout the world (i.e., Korea, Balkans, Northern Europe)
- HPS case situations:
  - planting or harvesting field crops
  - occupying previously vacant cabins or other dwellings
  - cleaning barns and other outbuildings
  - disturbing rodent-infested areas while hiking or camping
  - inhabiting dwellings with indoor rodent populations
  - residing in areas of increased rodent population density

GENERAL PRECAUTIONS

- Air out closed up buildings for at least 30 minutes
- Eliminate rodents/availability of food sources /nesting sites
- Wet down infested areas with bleach/disinfectant to kill virus
- in other words:

AIR OUT, SEAL UP, TRAP UP, CLEAN UP

PRECAUTIONS WHILE OUTDOORS

- Watch for signs of rodents (droppings/nests).
- Avoid rodent infested areas.
- Use proper hygiene procedures while in outdoors, specifically before eating or drinking.
- See your physician if symptoms of HPS develop, especially if you were in contact with rodents.

"ensure you state you were around rodents"

CLEANING PROCEDURES

Rodent Urine and Droppings and Contaminated Surfaces

- Clean equipment/items outside if possible (direct sunlight – destroys the virus).
- Wear rubber, latex, vinyl, or nitrile gloves during cleaning.
- DO NOT stir up dust by sweeping, vacuuming, etc.
- Wet contaminated areas with disinfectant/bleach to deactivate the virus. A 10% hypochlorate solution may be used (1½ cups of household bleach in one gallon of water).
- Once wetted, remove materials with a paper towel.
- Clean items, floor, and other surfaces with disinfectant.
- Spray dead rodents with disinfectant, then double bag with cleaning materials. Bury, burn or dispose of properly.
- Disinfect gloves before taking them off, wash hands with soap.

CLEANING PROCEDURES

Dead Rodents and Rodent Nests

- Wear rubber, latex, vinyl, or nitrile gloves during cleaning.
- Use insect repellent (containing DEET) on clothing, shoes, and hands to reduce risk of fleabites that might transmit plague.
- Spray dead rodents with disinfectant or chlorine solution thoroughly.
- Double bag the dead rodent and cleaning materials. Bury, burn or dispose of properly (contact local health departments).
- Clean surrounding area as in previous slide.

CLEANING PROCEDURES

Shed and Outbuilding: to include supply containers, bunkers, magazines, warehouses, boxcars, and stored vehicles

- Air out building for at least 30 minutes.
- Leave the area during the air-out period. Assists in removing infectious hantavirus aerosols.
- In substantially dirty or dusty environments, wear additional PPE such as coveralls (disposable if possible) and goggles or safety glasses.

Facilities or stored vehicles that are abandoned or are closed up for long periods (weeks or months) without ventilation pose the greatest risk.

CLEANING PROCEDURES

Heavy Rodent Infestation & Confirmed Hantavirus Infection: Applies when occupied person with confirmed hantavirus case and can apply to facilities or structures that are closed up for extended periods

- Heavy Rodent Infestation: piles of feces or numerous nests or dead rodents
- Cleanup procedures same as previous situations (slides 14-16)
- Persons involved with cleanup will wear:
  - coveralls (disposable if possible)
  - rubber boots or shoe covers
  - rubber, vinyl, or nitrile gloves
  - protective goggles
  - half mask or powered air purifying respirators (PAPR) with N-100 filters
  - soldiers may wear the M-40 mask
- Decontaminate PPE and dispose of all infectious waste material to include respirator filters in accordance with local guidance

LOCAL GUIDANCE AND ASSISTANCE

- Contact local installation Preventive Medicine (PM) Services or local and State Health Department
  - Local threat
  - Local procedures and precautions
- If not on an Army installation with medical services, contact local USACHPPM regional command at http://usachppm.apgea.army.mil/subcommands.asp
  - Entomologists can provide guidance
  - Capability to sample rodents for hantavirus prevalence

SUMMARY

- **Risk of becoming ill is very Low, but the fatality rate is High.**

- **Hantavirus is prevalent throughout the U.S. and similar strains are located worldwide**
- **Precautions must be used to protect yourself**
- **Proper cleaning procedures must be followed**

Hantavirus Information. Much of the briefing info came from the below CDC web site. Additional information and references can be found at:

- The Center for Disease Control and Prevention (CDC) web site: http://www.cdc.gov/ncidod/diseases/hanta/hps/index.htm. Teaching materials such as PowerPoint slide shows, prevention campaign images, and handout cards are at: http://www.cdc.gov/ncidod/diseases/hanta/hps/noframes/teach.htm.

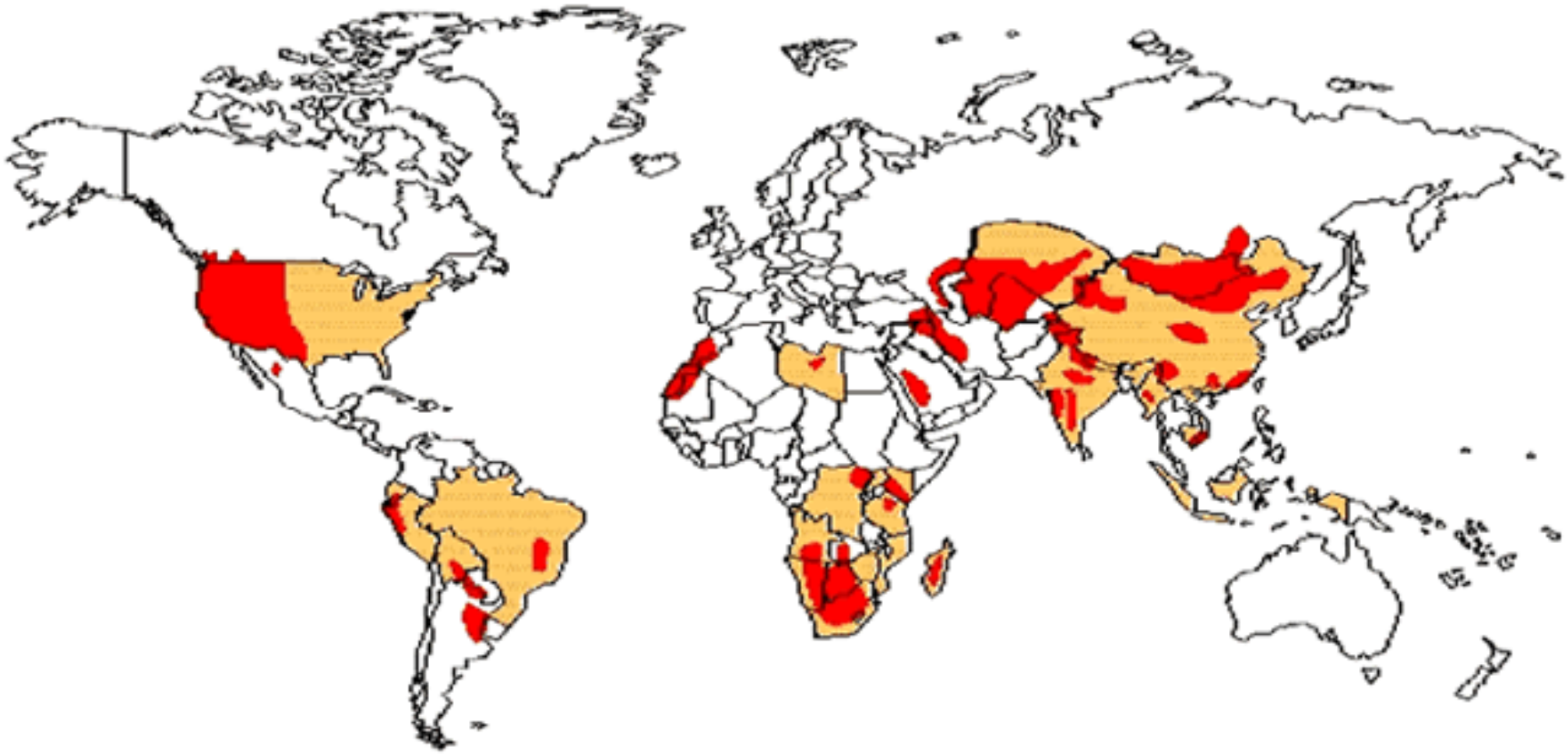
- Brochures, technical manuals, and videos by mail can be found at the CDC's Special Pathogens Branch page and learn how you can order prevention materials: http://www.cdc.gov/ncidod/dvrd/spb/mnpages/teach.htm.

-The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), Entomological Sciences Program web site: http://chppm-www.apgea.army.mil/ento/default.htm.

- The Armed Forces Pest Management Board home site (http://www.afpmb.org/pubs/tims/tims.htm) has Technical Information

BACKUP SLIDES FOLLOW

World Distribution of Plague, 1998



Countries reported plague, 1970-1998.

Regions where plague occurs in animals.

New World Hantaviruse